

Appl. No. 10/662,029
Amdt. Dated April 14, 2008
Reply to Office Action Mailed January 14, 2008

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Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A pulse width modulation current adjustment apparatus, comprising:

a triangle wave generator for generating a triangle wave voltage signal;

a modulation voltage source configured for providing a modulation voltage signal;

a comparator;

a field effect transistor;

a power supply;

a first resistor; and

a second resistor;

wherein the triangle wave generator includes a first operational amplifier, a front resistor, a first feedback resistor, a second feedback resistor, a first current limiting resistor, a second operational amplifier, a second current limiting resistor, a capacitor, and a back grounding resistor;

the front resistor electrically connects a negative terminal of the first operational amplifier to ground;

the first feedback resistor, the second feedback resistor and the first current limiting resistor electrically connect to a positive terminal of the first operational amplifier so as to form a zero-crossing comparator;

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the second operational amplifier, the second current limiting resistor, the capacitor and the back grounding resistor together form an integrator;

the back grounding resistor electrically connects a positive terminal of the second operational amplifier to ground;

an output terminal of the first operational amplifier electrically connects to the positive terminal of the first operational amplifier via the first current limiting resistor and the first feedback resistor;

an output terminal of the second operational amplifier electrically connects to the negative terminal of the second terminal of the second operational amplifier via the capacitor;

the output terminal of the second operational amplifier further electrically connects to the positive terminal of the first operational amplifier via the second feedback resistor;

the output terminal of the second operational amplifier is configured for outputting the triangle wave voltage signal;

~~the triangle wave voltage signal has a plurality of rising portions and a plurality of declining portions, the triangle wave voltage signal only comprises odd harmonics such that a percentage of high frequency harmonics of the triangle wave voltage signal is low;~~ the triangle wave voltage signal and the modulation signal are input to the comparator, and an output of the comparator is connected to a gate terminal of the field effect transistor, the first resistor is connected between the power supply and a source terminal of the field effect transistor, and a drain terminal of the field transistor outputs a pulse width modulation current signal through the second resistor to a load.

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Claim 2 (currently amended): The pulse width modulation current adjustment apparatus as described in claim 1, wherein the triangle wave voltage signal is a symmetric triangle wave voltage signal.

Claim 3 (previously presented): The pulse width modulation current adjustment apparatus as described in claim 1, wherein the field effect transistor is an N-channel enhancement-type field effect transistor.

Claim 4 (previously presented): The pulse width modulation current adjustment apparatus as described in claim 1, wherein the field effect transistor is a P-channel enhancement-type field effect transistor.

Claim 5 (currently amended): The pulse width modulation current adjustment apparatus as ~~claimed~~ described in claim 1, wherein the field effect transistor is an N-channel depletion-type field effect transistor.

Claim 6 (currently amended): The pulse width modulation current adjustment apparatus as ~~claimed~~ described in claim 1, wherein the field effect transistor is a P-channel depletion-type field effect transistor.

Claim 7 (cancelled)

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Claim 8 (currently amended): A triangle wave generator used in a pulse width modulation current adjustment apparatus, the triangle wave generator comprising:

a first operational amplifier (15);

a front resistor (23) electrically connecting a negative terminal of the first operational amplifier (15) to ground;

a first feedback resistor (21), a second feedback resistor (22) and a first current limiting resistor (24) electrically connecting to a positive terminal of the first operational amplifier (15) so as to form a zero-crossing comparator;

a second operational amplifier (16), a second current limiting resistor, (18) ~~and a capacitor (17), and a back grounding resistor~~ together forming an integrator;

[[a]] the back grounding resistor (25) electrically ~~connected~~ connecting a positive terminal of the second operational amplifier (16) to ground; and

an output of the first operational amplifier (15) electrically connected to ~~said the~~ the positive terminal of the first operational amplifier (15) via ~~said the~~ the first current limiting resistor (24) and ~~said the~~ the first feedback resistor (21), an output of the second ~~operation~~ operational amplifier (16) electrically connected to the negative terminal of the second operational amplifier (16) via the capacitor (17) and also electrically connected to the positive terminal of the first operational amplifier (15) via the second feedback resistor (22), and the output of the second ~~operation~~ operational amplifier (16) outputting a triangle wave voltage signal, ~~the triangle wave voltage signal having a plurality of rising portions and a plurality of declining portions, and the triangle~~

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~~wave voltage signal only comprising odd harmonics such that a percentage of high frequency harmonics of the triangle wave voltage signal is low.~~

Claim 9 (new): The triangle wave generator as described in claim 8, wherein the integrator comprising the back grounding resistor connecting the positive terminal of the second operational amplifier to ground provides the triangle wave generator with the characteristic that the triangle wave voltage signal output by the second operational amplifier has a plurality of rising portions and a plurality of declining portions, with the triangle wave voltage signal consisting only of odd harmonics such that a percentage of high frequency harmonics of the triangle wave voltage signal is low.

Claim 10 (new): The pulse width modulation current adjustment apparatus as described in claim 1, wherein the second operational amplifier, the second current limiting resistor, the capacitor and the back grounding resistor together forming an integrator and the back grounding resistor electrically connecting a positive terminal of the second operational amplifier to ground provide the triangle wave generator with the characteristic that the triangle wave voltage signal output by the output terminal of the second operational amplifier has a plurality of rising portions and a plurality of declining portions, with the triangle wave voltage signal consisting only of odd harmonics such that a percentage of high frequency harmonics of the triangle wave voltage signal is low.